SN 11/723,075
Docket No. S-102,315
In Response to Office Action dated October 24, 2007

REMARKS

Claim Status

Claims 1-4 are pending in the present application.

Rejections

1. Rejection Under 35 USC §103(a) Over U.S. Patent 4,277,323 ("Muller"), in view of U.S. Patent 5,028,404 ("Carberry").

2. Rejection Under 35 USC §103(a) Over U.S. Patent 4,277,323 ("Muller") in view of U.S. Patent 5,028,404 ("Carberry") in further view of U.S. Patent 4,755,274 ("Mase").

3. Rejection Under 35 USC §103(a) Over U.S. Patent over U.S. Patent 5,543,025 ("Garzon") in view of U.S. Patent 5,028,404 ("Carberry").

4. Rejection Under 35 USC §103(a) Over U.S. Patent over U.S. Patent 5,543,025 ("Garzon") in view of U.S. Patent 5,028,404 ("Carberry") in further view of U.S. Patent 4,755,274 ("Mase").

The Office Action maintains the rejections under 35 U.S.C. 103(a) of claims 1-3 under over Muller in view of Carberry; claim 4 over Muller in view of Carberry as applied to claim 1, in further view of Mase; claims 1-4 over Garzon in view of Carberry; and of claim 4 over Garzon in view of Carberry in further view of Mase. Applicants offer the following remarks for consideration.

The Office Action states that Carberry ('404) provides an express teaching to substitute the metal oxides for noble metals. In fact, Carberry teaches substitution of metal oxides for noble metals in catalysts. This is a significant difference. Applicants point out that a reference is not available under 35 U.S.C. §103(a) if it is not within the field of the inventor's endeavor and was not directly pertinent to the particular problem with which the inventor was involved. *King Instrument Corp. v. Otari Corp.* 767 F.2d 853, 226 U.S.P.Q. 402 (Fed. Cir. 1985). For the reasons set forth in the Response of September 21, 2007, Applicants' explain that not only is Carberry ('404) not pertinent to Applicants' invention, but that the problem to be solved in Carberry is essentially opposite to that of Applicants' invention, as catalysis is undesirable in sensors.

Therefore, Applicants disagree with the Office Action's implication that this is a "formalistic conception of the words teaching, suggestion and motivation."

The Office Action states that the claims do not require any step of detecting a difference or of detecting a reaction rate and "aren't even method claims," and as such, rejects Applicants argument that the present invention detects differences in electrochemical reaction rates occurring on the electrodes. Claims must be read in light of the specification. *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005). Applicants point out that the present claims require an electrode and a reference electrode. As one of ordinary skill in the art would understand, when an electrode and a reference electrode are present, there is detection of a difference in current, which in turn relates to the reaction rate. See page 2, paragraph 2 of the specification. Thus, a function of the claimed article is to detect differences in reaction rates. Applicants further explain on page 9, Table 1 and lines 5-15 that response time is measured in terms of the voltage difference between the first electrode and the reference electrode. Thus, Applicants believe that the argument that the present invention detects differences in electrochemical reaction rates has proper basis, in particular when used in the context of explaining why Carberry is not within the field of Applicants' endeavor.

The Office Action states "the 3-phase interface applicant repeatedly mentions is not a required element of the claimed structure." Claims must be read in light of the specification. *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005). Claim 1 requires a a metal oxide electrode body contained within the electrolyte body and having a first electrode surface coplanar with the first electrolyte surface, wherein the electrolyte body is compressed and sintered about the metal oxide electrode body for intimate contact therebetween. As Applicants explain on page 5, lines 2-3, the 3-phase interface region is the region encompassing the gas-electrolyte-electrode region of the sensor. Thus, the metal oxide electrode is the first phase, the electrode surface is the second phase, and the hydrocarbon is the third phase. When properly read in light of the specification, it is clear that claim 1 requires a 3-phase interface.

The Office Action states "Applicant's statement that a porous electrolyte body is not suitable, contradicts applicant's claiming of a porous electrolyte body in claim 4." Applicants statements in the Response of September 21, 2007 in regard to Muller and Garzon were correct, and Applicants' maintain that one of skill in the art would not be motivated to combine the oxygen sensor of Muller or Garzon (which require a porous substrate) with Carberry. However, Applicants statements in regard to the application of Mase to claim 4, i.e. that "a porous electrolyte body would not result in a suitable hydrocarbon sensor" were in error. In fact, it is the electrode and not the electrolyte that is non-porous. Applicants regret this inadvertent error, and point out that claim 4 is consistent with the specification and with the data presented therein, and that Applicants explain on page 8, lines 12-22 of the specification that "by increasing the porosity of the electrolyte material, the gases meander through the YSZ electrolyte instead of the electode with a concomitant decrease in he heterogeneous catalysis that occurs...". Applicants do maintain, however, that there would have been no motivation for one of skill in the art to combine Muller with Carberry to arrive at the invention of claim 1, and because claim 4 depends from claim 1 and incorporates all elements thereof, it would be similarly non-obvious to combine Mase with Muller and Carberry.

The Office Action asserts that contrary to Applicant's remarks, Figure 2 of Garzon ('025) depicts the mixed conductor 34 as being coplanar with the electrolyte 32. As Applicants view Figure 2 of Garzon ('025), the electrode pads are depicted by 38 and 42, and are not coplanar with the electrolyte 32. Applicants believe that the mixed conductor 34 referred to in the Office Action is not an electrode but a diffusion barrier, as Garzon in col. 2, lines 18-20 refers to a "dense diffusion barrier of a mixed solid oxygen ion and electronic conductor," and in col. 6, lines 34-36 states "[t]he mixed conductors used as diffusion barriers for our exemplary oxygen sensors had a relatively high oxygen diffusion coefficient." Thus, Applicants maintain that Garzon fails to depict a coplanar electrode and electrolyte.

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Conclusion

In view of the foregoing, consideration of these arguments and reconsideration of this application and allowance of Claims 1-4 is respectfully requested.

Respectfully submitted,

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